

**ABSTRACT**

A system and method for processing semiconductor wafers using different wafer processes utilizes multiple processing assemblies to efficiently perform these wafer processes. The wafer processes performed by the processing assemblies may vary with respect to operating parameters or the types of wafer processes, which allows customization of the wafer processes. Each of the processing assemblies is configured to sequentially process two or more semiconductor wafers at different processing positions by sequentially transferring the semiconductor wafers to the different processing positions using a wafer transfer carousel. As the semiconductor wafers are processed at one of the processing assemblies, the processed semiconductor wafers are sequentially transferred to the next processing assembly in an efficient manner. The sequential processing of the semiconductor wafers at each of the processing assemblies and the sequential transferring of the wafers contribute to an increased throughput.

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